THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 19

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte RONALD J. HOXMEIER

Appeal No. 1996-1284
Application No. 08/084,685

ON BRIEF

Before KIMLIN, WARREN and KRATZ, Administrative Patent Judges.

KIMLIN, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1-3, all the claims remaining in the present application. Claim 1 is illustrative:

1. An improved process for the preparation of a random copolymer of at least one conjugated diene and at least 50% by weight of a vinyl aromatic compound wherein the monomers are

polymerized with a lithium initiator, the improvement comprising polymerizing at least 5% by weight of the monomers in a non-polar solvent prior to addition of a sufficient amount of tetramethylethylenediamine to achieve 1,2-addition of at least 60%, and then slowly adding the remaining portion of the monomers to maintain a reaction temperature from 10EC to 40EC.

The examiner relies upon the following references as evidence of obviousness:

Hall	4,429,091	Jan. 31, 1984
Phillips Petroleum (GB '490)[1]	884,490	Dec. 13, 1961
Van Amerongen et al. (Van Amerongen)[2]	1,283,327	Jul. 26, 1972

Appealed claims 1-3 stand rejected under 35 U.S.C. § 103 as being unpatentable over Van Amerongen and GB '490 in view of Hall.

Appellant's claimed invention is directed to a process for preparing a random copolymer of a conjugated diene and a vinyl aromatic compound, such as styrene. The process entails employing tetramethylethylenediamine as a modifier in the reaction process.

---

[1] (Great Britain patent specification)

[2] (Great Britain patent specification)

Appellant submits at page 3 of the Reply Brief that "[a]pplicant does not assert that any claim stands separate from claim 1 for the following arguments regarding the issue." Accordingly, appealed claims 1-3 stand or fall together.

We have thoroughly reviewed each of appellant's arguments for patentability. However, we are in full agreement with the examiner that the claimed subject matter would have been obvious to one of ordinary skill in the art within the meaning of § 103 in view of the applied prior art. Accordingly, we will sustain the examiner's rejection for the reasons set forth in the Answer, and we add the following primarily for emphasis.

There is no dispute that Van Amerongen teaches the preparation of a random copolymer of a conjugated diene and a vinyl aromatic compound in the presence of a lithium initiator and a polar modifier. Van Amerongen incorporates by reference the polar modifiers disclosed in GB '490, which include five aliphatic amines having the same active tertiary dimethylamine as the presently claimed tetramethylethylenediamine (see the disclosure of dimethylethylamine at page 2, line 24 of GB '490). Hence, the dispositive issue on appeal is whether

appellant's modifier, tetramethylethylenediamine, would have been obvious to one of ordinary skill in the art in view of the prior art's use of dimethylethylamine as a polymerization modifier.

Appellant maintains that "the claimed process which employs a tertiary diamine is not suggested by the naming of tertiary amines or even specific tertiary amines which are not diamines" (page 3 of Reply Brief, emphasis added). However, it is well settled that, on the issue of structural obviousness, the prima facie case of obviousness arises from the reasonable expectation that compounds that are very similar in structure will have similar properties. In re Hoch, 428 F.2d 1341, 1343-44, 166 USPQ 406, 409 (CCPA 1970).

In the present case, it is our view that the claimed diamine is sufficiently similar in structure to the tertiary amines disclosed by GB '490 that one of ordinary skill in the art would have reasonably expected that the claimed diamines would be a suitable modifier in the polymerization process of Van Amerongen. Our view is consistent with the examiner's rationale set forth on page 7 of the Answer and in the examiner's response to appellant's Reply Brief (Paper No. 15).

We note that appellant bases no argument upon objective evidence of nonobviousness which demonstrates that the claimed diamine produces unexpected results in the random copolymerization process vis-à-vis the tertiary amines disclosed by GB '490. Moreover, appellant acknowledges that Prudence, U.S. Patent No. 4,230,841, evidences that it was known in the art to use the presently claimed tetramethyl-ethylenediamine as a modifier in the copolymerization of butadiene with a vinyl aromatic compound, specifically, a divinyl aromatic compound (see page 3 of Reply Brief, last paragraph).

In conclusion, based on the foregoing, the examiner's decision rejecting the appealed claims is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED

EDWARD C. KIMLIN)
Administrative Patent Judge)
)
)
)

CHARLES F. WARREN Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
PETER F. KRATZ Administrative Patent Judge	)	

ECK:clm

Keith M. Tackett
c/o Shell Oil Co.
Intellectual Property
P.O. Box 2463
Houston, TX 77252-2463